REMARKS

Claims 1, 3, 5, 7, 9 and 11 are pending in the present application. Claims 1 and 3 were rejected. Claims 1, 3, 5 and 7 are herein amended. No new matter has been added. Applicants thank the Examiner for the courtesies extended in the telephone interview of June 11, 2009. Applicants' Statement of the Substance of the Interview is incorporated herein.

Applicants' Response to Claim Rejections under 35 U.S.C. §103

Claim 1 was rejected under 35 U.S.C. §103(a) as being unpatentable over Lee et al. (U.S. Patent Application Publication No. 2002/0047560) in view of Amano et al. (JP 2002-293049).

Claim 3 was rejected under 35 U.S.C. §103(a) as being unpatentable over Lee in view of Komura (JP 2003-029271).

It is the position of the Office Action that Lee discloses the invention as claimed, with the exception of (i) teaching the micro-projections being formed into a truncated cone or in a cylinder and (ii) the specifically claimed dimensions of the micro-projections. The Office Action relies on Amano to provide the teaching of (i), and argues that (ii) would have been obvious.

It is the position of the Office Action that Lee discloses the invention as claimed, with the exception of (i) teaching the micro-stripes on the top faces of the convex portions, wherein a cross-section of the micro-stripes in a direction perpendicular to the longitudinal direction is trapezoidal or rectangular and (ii) the specifically claimed dimensions of the micro-stripes. The

Office Action relies on Komura to provide the teaching of (i), and argues that (ii) would have been obvious.

Lee is directed at an apparatus and method for patterning pixels of an electroluminescent display device. As illustrated in Figure 2, EL polymer 16 is deposited on polymer supply roller 8, and then transferred to molding plate 6 on roller 4. This molding plate 6 includes a series of lands 12 and grooves 14. A close-up of the molding plate 6 is provided in Figure 3. The land 12 includes indentations 12a. A perspective view of the molding plate 6 is provided in Figure 4, and a close-up is provided in Figure 5, where the indentations 12a are illustrated.

The polymer solution 16 is transferred from the surface of the supply roller 8 to the molding plate 6, and adheres to the surface of the lands 12 of molding plate 6 and in the indentations 12a of the lands 12. As illustrated in Figures 9A-9D, the polymer solution 16 can be printed onto an indium-tin-oxide (ITO) pattern 52 on a substrate 2. As illustrated in Figures 9B-9D, it appears that the pitch between lands 12 is equal to the width of one pixel (note "R" and "R" separated by two blank spaces in Figure 9D). It is noted that in the embodiments of Figures 9A-9B and Figures 11A-11D, each printing space is separated by a barrier rib 50 or 40, respectively. However, the embodiment illustrated in Figures 6A-6C lacks such a barrier rib. Furthermore, although Lee does not explicitly state the thickness of the printed polymer 16, it is stated that in the prior art, "it is difficult to form a pinhole-free thin film of less than 1000Å thickness." Paragraph [0008].

It is the position of the Office Action that the Declaration filed on December 2, 2008 submitted is not sufficient to overcome the rejection for two reasons: (1) the Declaration is

allegedly not commensurate in scope with the claims, and (2) the Declaration is allegedly opinion evidence, rather than factual evidence.

First, Applicants discuss whether the Declaration is commensurate in scope with the claims. The Declaration states that the micro-projections allow for printing of the fluid in a precise and fine pattern with a uniform thickness, without the need for barrier ribs. The Office Action correctly notes that the absence of a need for barrier ribs and the uniformity of the printed pattern are not recited in the claims. Applicants respectfully submit that the absence of a need for barrier ribs, and the uniformity of the printed pattern are not structural features of the claimed layer forming relief. Rather, these are inherent properties of the claimed layer forming relief. In other words, due to the recited structure of the printing convex portions and micro-projections of the layer forming relief, the layer forming relief necessarily has the ability to print the fluid in a precise and fine pattern with a uniform thickness, without the need for a barrier rib. As explained in the Declaration, these inherent properties amount to an unexpected result. Furthermore, it is not necessary to recite an inherent property in the claims. It is logical to hold that a product is unobvious because of the discovery in it of unobvious properties, because the properties inhere in the product. *In re Papesch.* The Court in *Papesch* did not require that the claims recite the unexpected properties. Likewise, the Court in *In re Chupp* held that the properties can be the basis of patentability, not that those properties must produce superior results in every environment in which the compound may be used. *In re Chupp*, 2 USPQ2d 1437, 1439 (CAFC 1987). Additionally, evidence and arguments directed at advantages not disclosed in the specification cannot be disregarded. *In re Chu*, 66 F.3d 292, 298-99, 36 USPQ2d 1089, 1094-95

(Fed. Cir. 1995). It logically follows that the inherent properties of the layer forming relief, which are the unexpected results, need not be claimed.

Applicants also provide more detailed comments about the combination of Lee and Amano. Figures 6A-6C and 7A-7C illustrate a first embodiment of Lee. In this embodiment, the polymer solution 16 is held in the indentations 12a of the lands 12 of the molding roller 4. As discussed in paragraph [0034], after printing, the printed material spreads, resulting in lower uniformity. In order to solve this problem, a second embodiment of Lee employs the use of barrier ribs. See Figures 9A-9D. As a result of the barrier ribs 50, the polymer solution 16 cannot spread. See paragraph [0036].

Applicants' remarks with respect to the previously filed Declaration can be characterized in two ways. First, Applicants' remarks can be characterized in that the presence of an unexpected property is evidence of non-obviousness. For this, Applicants refer to the combination of Figures 6A-6C and 7A-7C and Amano. One having ordinary skill in the art would have expected that if this embodiment of Lee was modified such it has the micro-projections of Amano, the result would be no different from that discussed in Lee. One having ordinary skill in the art would have expected that such a combination would still result in "spreading" like that illustrated in Figure 7C. However, the combination had the unexpected property of "non-spreading," thus negating the need for barrier ribs in order to obtain a precise fine, pattern with uniformity. The presence of an unexpected property not possessed by the prior art is evidence of non-obviousness. See MPEP §716.02(a)(III).

Second, Applicants' remarks can be characterized in that the absence of an expected property is evidence of non-obviousness. For this, Applicants refer to the combination of Figures 9A-9D and Amano. One having ordinary skill in the art would have expected that if this embodiment of Lee was modified such it has the micro-projections of Amano, the result would be no different from that discussed in Lee. One having ordinary skill in the art would have expected that such a combination would still require the barrier ribs illustrated in Figures 9A-9D in order to stop "spreading." However, the combination lacked the expected property of "spreading," thus negating the need for barrier ribs in order to obtain a precise, fine pattern with uniformity. The absence of an expected property is evidence of non-obviousness. See MPEP §716.02(a)(IV).

Finally, Applicants discuss the second reason for holding that the Declaration is not sufficient to overcome the pending rejection. That is, the Declaration is allegedly opinion evidence, rather than factual evidence. The Office Action states that no factual evidence is provided. According to MPEP 716.02(c)(III), so-called "opinion testimony" is afforded "some weight." Thus, the comments of the Declarant cannot be simply ignored. However, Applicants herewith provide objective evidence in support of the Declaration. Please see the attached diagrams and photos of an embodiment of the layer forming relief of claims 1 and 3. These attachments include a picture of the layer forming relief according to an embodiment of claim 1, an enlarged picture of printing convex portions thereof, a picture of the pattern printed with the layer forming relief of an embodiment of claim 1, an enlarged picture of printing convex portions

of the layer forming relief according to an embodiment of claim 3, and a picture of the pattern printed with the layer forming relief according to an embodiment of claim 3.

As illustrated in the attached diagrams and photos, the layer forming relief necessarily has the ability to print the fluid in a precise and fine pattern with a uniform thickness, without needing a barrier rib. The patterns are printed with high precision, without spreading of the organic luminous substance out of the edges of the pattern. As illustrated, the width of the printed patterns is shown as 190 μm, while the width of the printing convex portion of the layer forming relief is 150 μm. The difference in the width is not due to spreading of the substance. Rather, the convex portion must be 150 μm wide to obtain a printed pattern having a width of 190 μm.

Next, Applicants discuss the viscosity of the printed material in the claimed embodiments and the cited art. Applicants note that prior to the present invention, it was known it use organic luminous substances having viscosities of less than 50 mPa·s, whereas the present invention allows for printing of organic luminous substances having viscosities of 50-100 mPa·s. As indicated by JP-A-2001-76873 and JP-A-2002-56980, which are cited in the Information Disclosure Statement filed herewith, at the time of invention, it had been common knowledge for one of ordinary skill in the art to use organic luminous substances that have a viscosity of less than 50 mPa·s. JP-A-2001-76873 recites in the bottom line of paragraph [0013] that "10-50 cp (preferably 20-30 cp) of viscosity is preferred" as the viscosity of the EL formation. This corresponds to the organic luminous substance of the present invention. It is noted that 1 cp (centipose) is equal to 1 mPa·s.

Similarly, JP-A-2002-56980 shows in Table 1 coating liquids for blue light stratification (corresponding to the organic luminous substance of the present invention), each containing a coating liquid having a viscosity of 2.6 cp and leveling agents having a viscosity of 1 cp, 5 cp, 10 cp or 100 cp blended in the coating liquid, and coating liquids for blue light stratification each containing a coating liquid having a viscosity of 4.2 cp and leveling agents having a viscosity of 8.3 cp blended in the coating liquid. The coating liquids for blue light stratification other than those containing a leveling agent having the viscosity of 100 cp have viscosities of less than 50 cp (50 mPa·s), since both of the coating liquids and the leveling agents contained therein have viscosities less than 50 cp. Further, the coating liquids for blue light stratification containing the leveling agent having the viscosity of 100 cp also have a viscosity of less than 50 cp (50 mPa·s), since the blending amount of the levelling agent is small: 2 wt% maximum. The EL agents (coating liquids for light stratification) having viscosities of less than 50 mPa·s as shown in the above publications were conventionally used, because the printing convex portion on which application fluid was applied had a smooth surface in the layer forming reliefs (or Toppan Printing devices).

In order to clarify the claimed subject matter, Applicants herein amend the claims to recite a layer forming relief "capable of transferring and printing an organic luminous substance having a viscosity in the range of 50 to 100 mPa·s applied on printing convex portions on a printing object." This subject matter is supported at least by page 6, lines 21-23 and page 16, line 17 to page 17, line 22.

In view of the above discussion regarding viscosities, Applicants respectfully submit that the pending rejection relies on an impermissible combination of non-analogous art. As to the rejection of claim 3, the Office Action relies upon a combination of Lee and Komura. Lee is directed at printing of organic luminous material. Although Lee does not explicitly discuss the viscosity of the solution, based on JP-A-2001-76873 and JP-A-2002-56980, Applicants respectfully submit that it can be assumed that the solution printed by Lee has a viscosity of less than 50 mPa·s, and thus discloses printing of a very low viscosity ("thin") fluid. On the other hand, Komura is directed at printing a sealing compound. Komura states that it is preferable to print sealing compound that has a viscosity of between 20,000 and 40,000 centipose (which equals 20,000 to 40,000 mPa·s), and thus is a very high viscosity ("thick") fluid. Accordingly, Applicants respectfully submit that at least to their drastically different viscosities, Lee and Komura are non-analogous art, and that Komura is not reasonably pertinent to the Applicants' field of endeavor. Therefore, Applicants respectfully submit that it would not have been obvious to combine these references.

Finally, Applicants discuss the structure of the printing devices. With respect to claim 3, Applicants respectfully submit that in Lee, since the solution has a very low viscosity, the thickness of the printed patterns is only 0.1 μm (see paragraph [0029]), and thus the channels in which the printed material is stored are very shallow. On the other hand, in Komura, the height of the sealing compound is 10 μm to 14.8 μm (see Examples 1-5), and thus the channels in which the printed material is stored are very deep. As such, if Lee was modified to include the linear recessed part 13a of Komura, the result would be that the low viscosity solution of Lee would

flow too much. As such, one having ordinary skill in the art would not have had a reason to modify Lee to incorporate the recessed part of Komura.

As to the structure of claim 1, Applicants respectfully submit that it would not have been obvious to incorporate the non-uniformly disposed projections of Amano into Lee. Applicants herein amend claim 1 to recite that the micro-projections are uniformly distributed on the printing convex portions. Support for this is found at least in Figures 2(a) and 3. As illustrated in Amano, the resin relief printing plate 1 includes a printing relief portion 2 having a rectangular shape and a top surface formed with a plurality of minute projections 3. The minute projections 3 are arranged at a higher distribution density in the peripheral region than in the center region of the printing relief plate 2. See Figure 2. If Lee and Amano were combined, the land 12 of Lee would be formed by the minute projection 3 of Amano instead of projections 12a. Thus, the minute projections 3 would be arranged at a higher distribution density in the peripheral region than in the center region of the land 12. Printing with the above convex portion 12 would result in uneven printing which deteriorates sharpness and uniformity of printing patterns. As such, one having ordinary skill in the art would not have had a reason to modify Lee to incorporate the micro-projections of Amano. Therefore, for at least the above reasons, Applicants respectfully submit that claims 1 and 3 are not obvious in view of the references cited. Favorable reconsideration is respectfully requested.

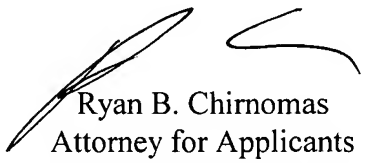
For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned attorney.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



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RBC/nrp
Enclosures: Diagrams and photos of layer forming relief (7 pages)
Information Disclosure Statement

Data Sheet

【Claim 1】

Properties of Ink

	Substance	Solid Content
Material	Polyimide	<6%
Diluent Material	N-methylpyrrolidon	>95%
Viscosity	60 mPa·s	

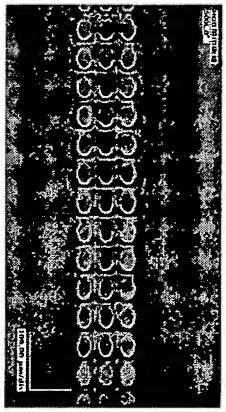
Printing Convex Portion

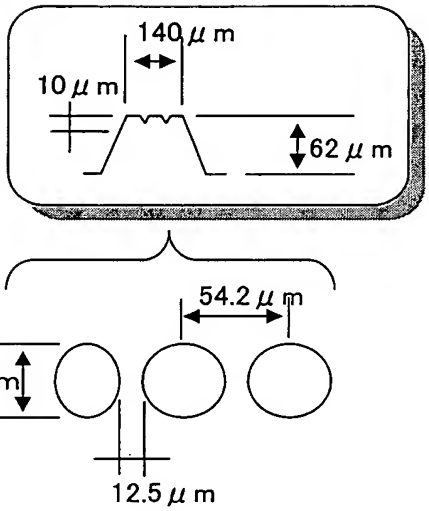
Groove for Retaining Organic Luminous Substance	Opening ratio 42%	Depth 10 μm
Width	140 μm	

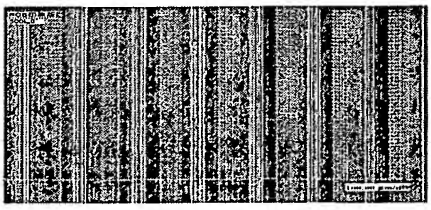
Printed Patterns

Width	190 μm
Thickness	830 Å

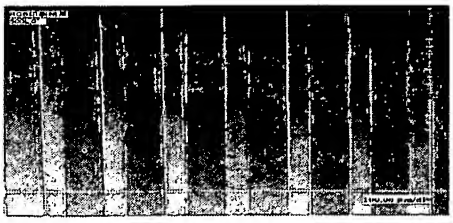
Enlarged Picture of a Printing Convex Portion





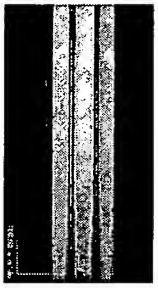


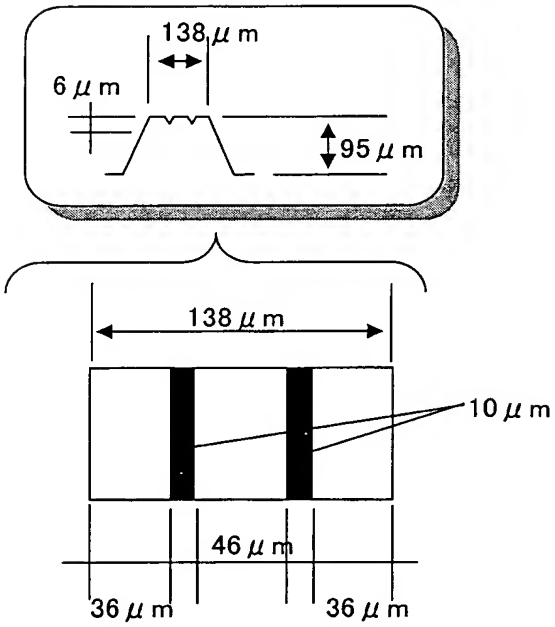
Picture of a layer forming relief

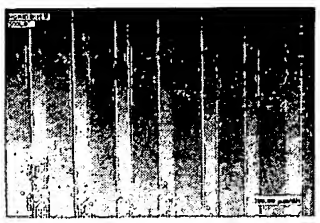


Printed patterns

【Claim 3】 Enlarged picture of a printing convex portion



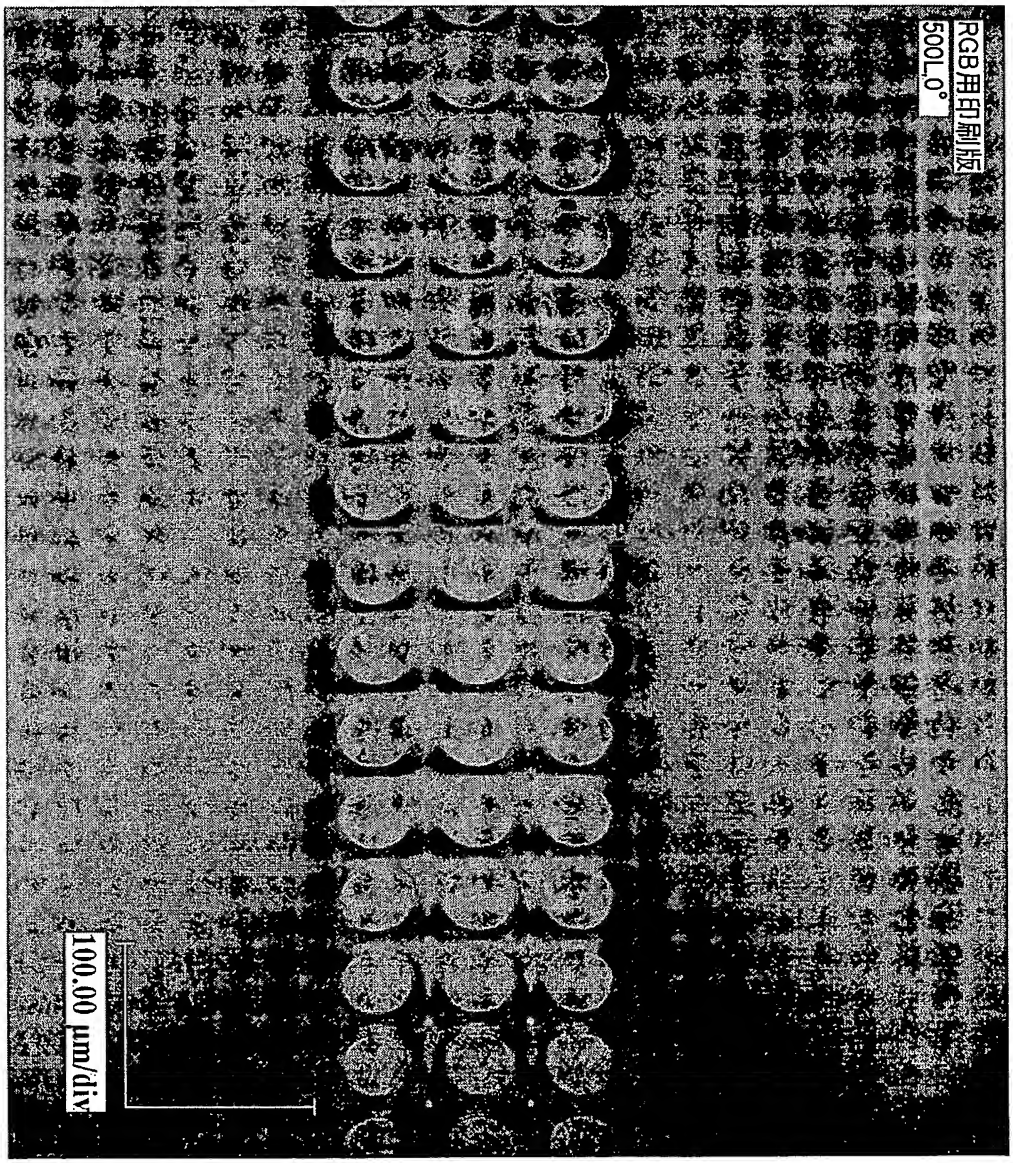




Printed patterns

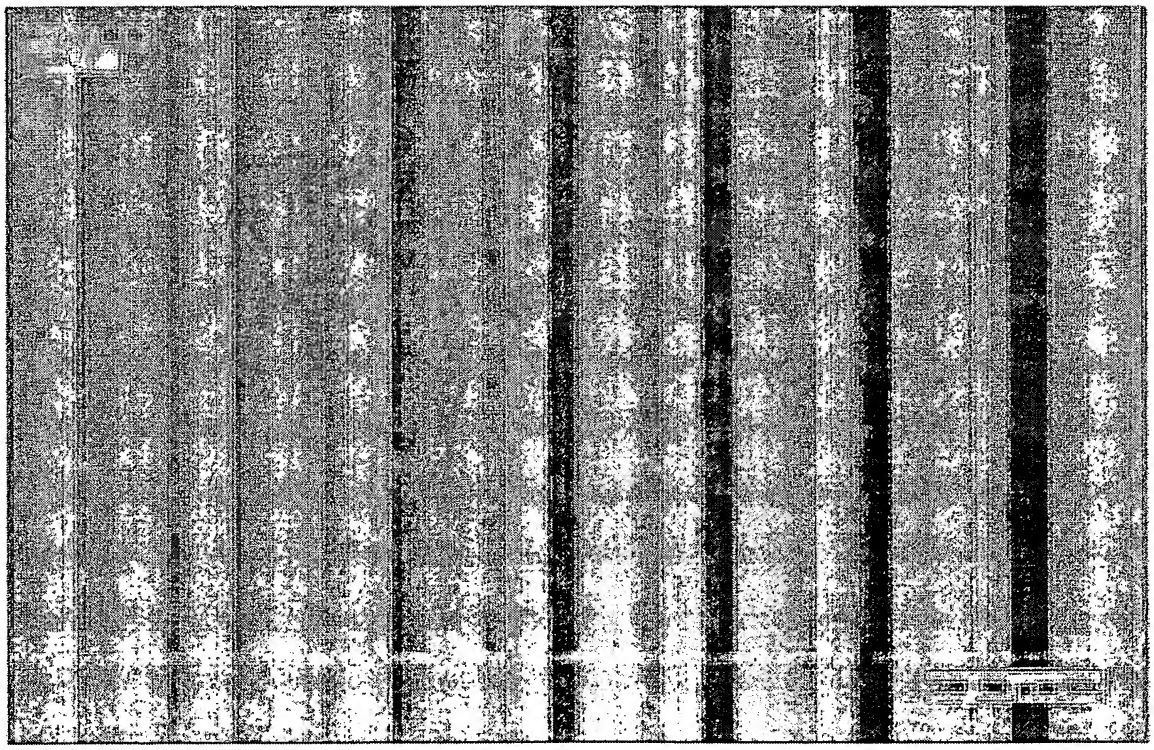
claim 1
Printing Convex Portion

【クレーム１】
印刷用凸部の拡大写真



【クレーム１】　　Claim 1

層形成用凸版の写真　　Layer forming Relief

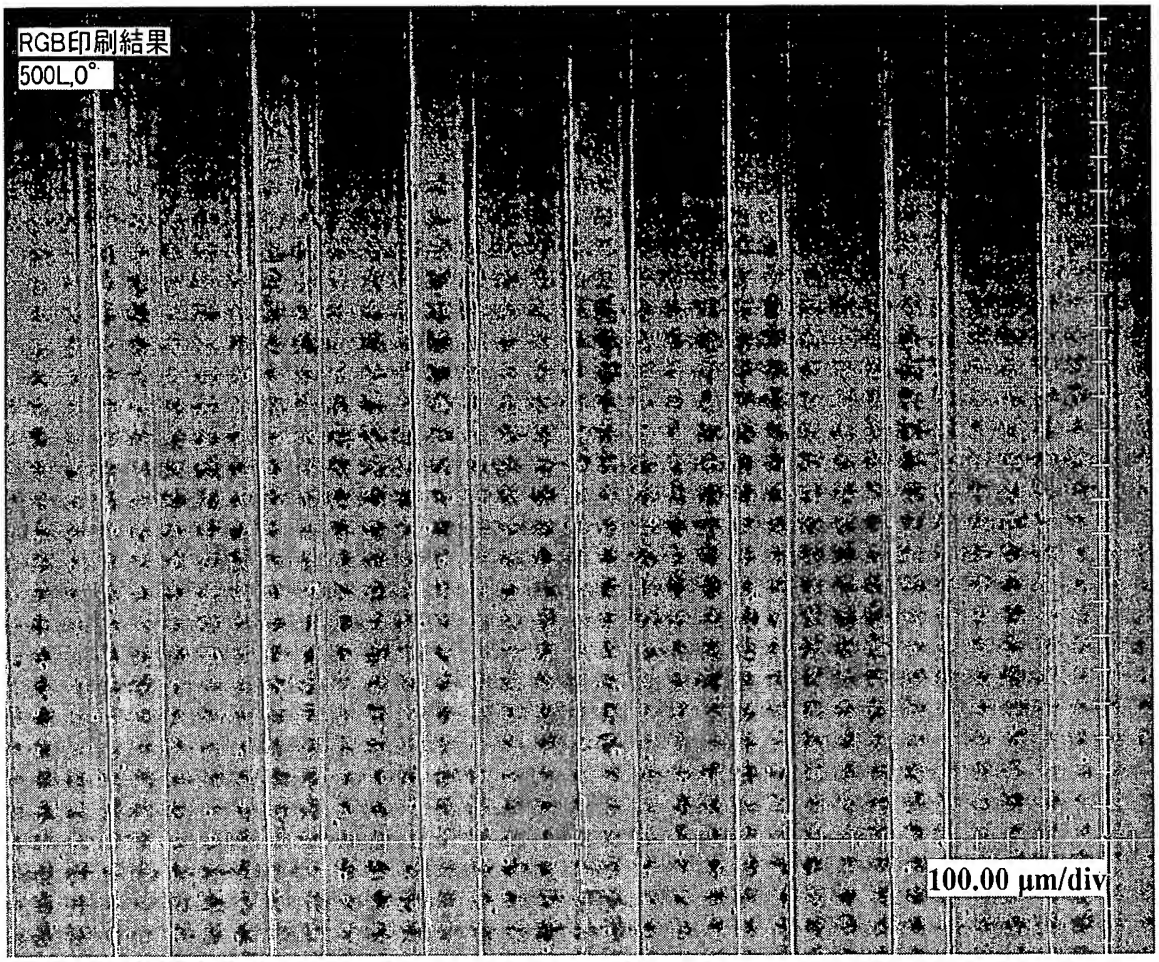


Claim 1

【クレーム１】

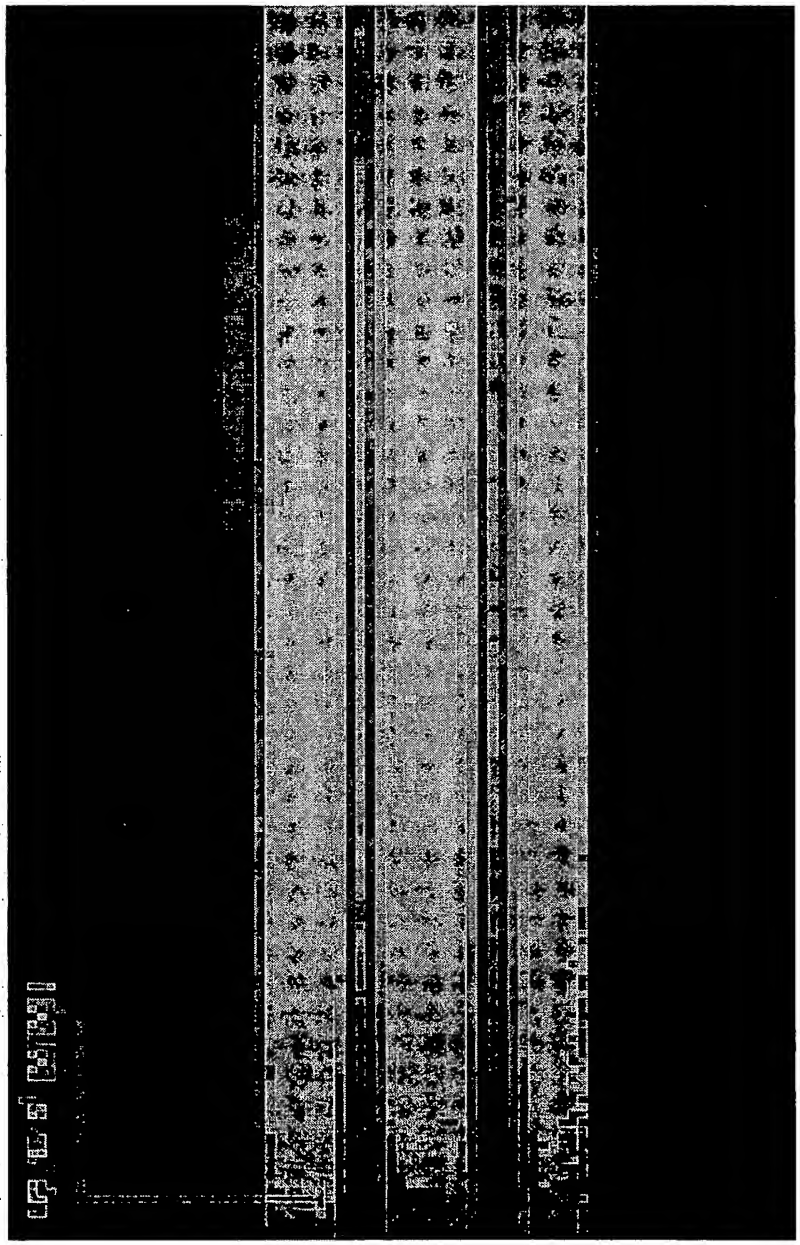
Printed Pattern

印刷結果の写真



【クレーム３】　　Claim 3

印刷用凸部の拡大写真　　Printing Convex Portion



【クレーム３】　claim 3

印刷結果の写真　Printed Patterns